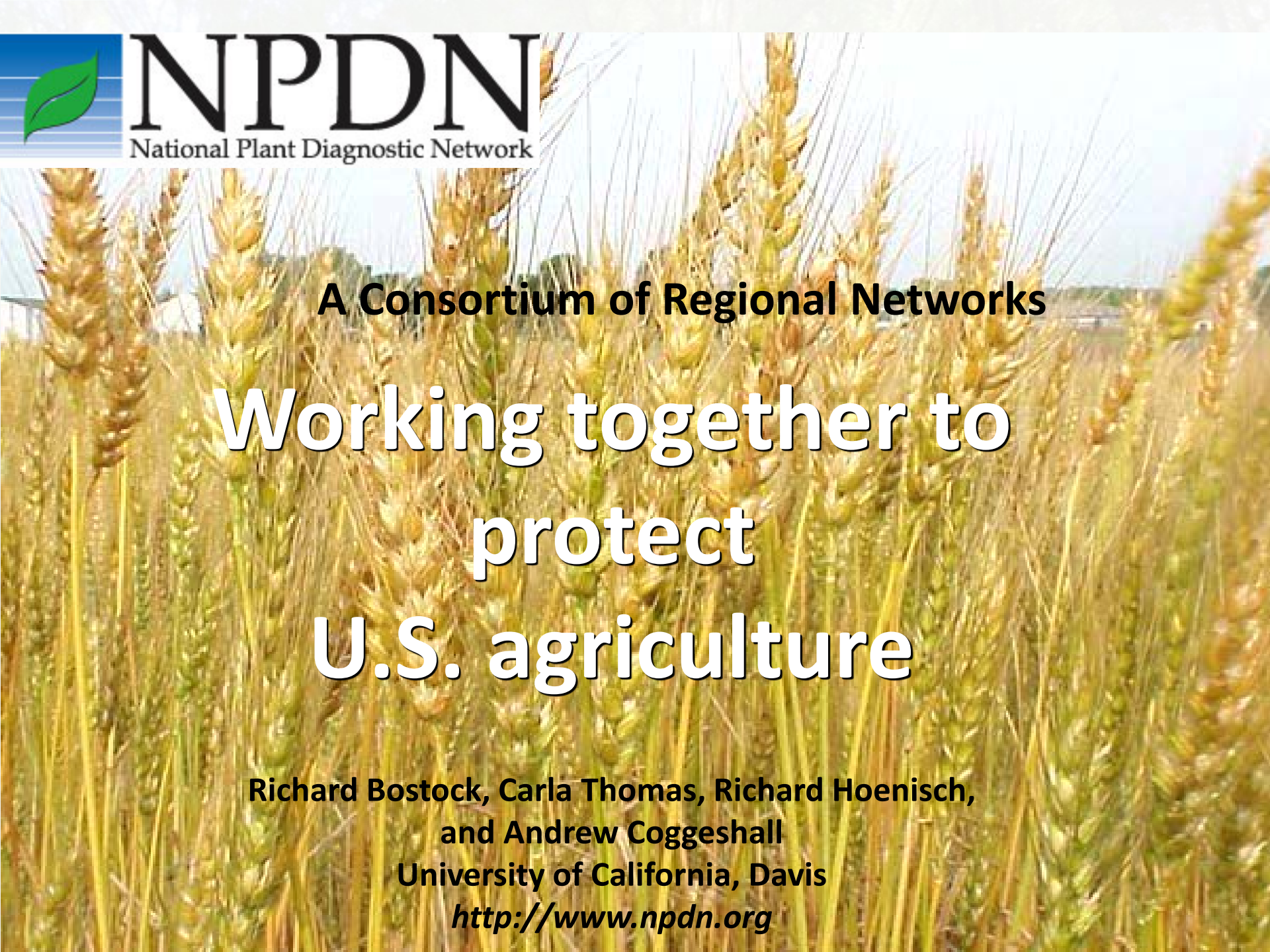
NPDN
National Plant Diagnostic Network

Western Region Tribal Integrated Pest Management Work Group

First Detector Training

Reno NV
29 October 2014



A Consortium of Regional Networks

Working together to protect U.S. agriculture

Richard Bostock, Carla Thomas, Richard Hoenisch,
and Andrew Coggeshall
University of California, Davis
http://www.npdn.org

What is the National Plant Diagnostic Network?

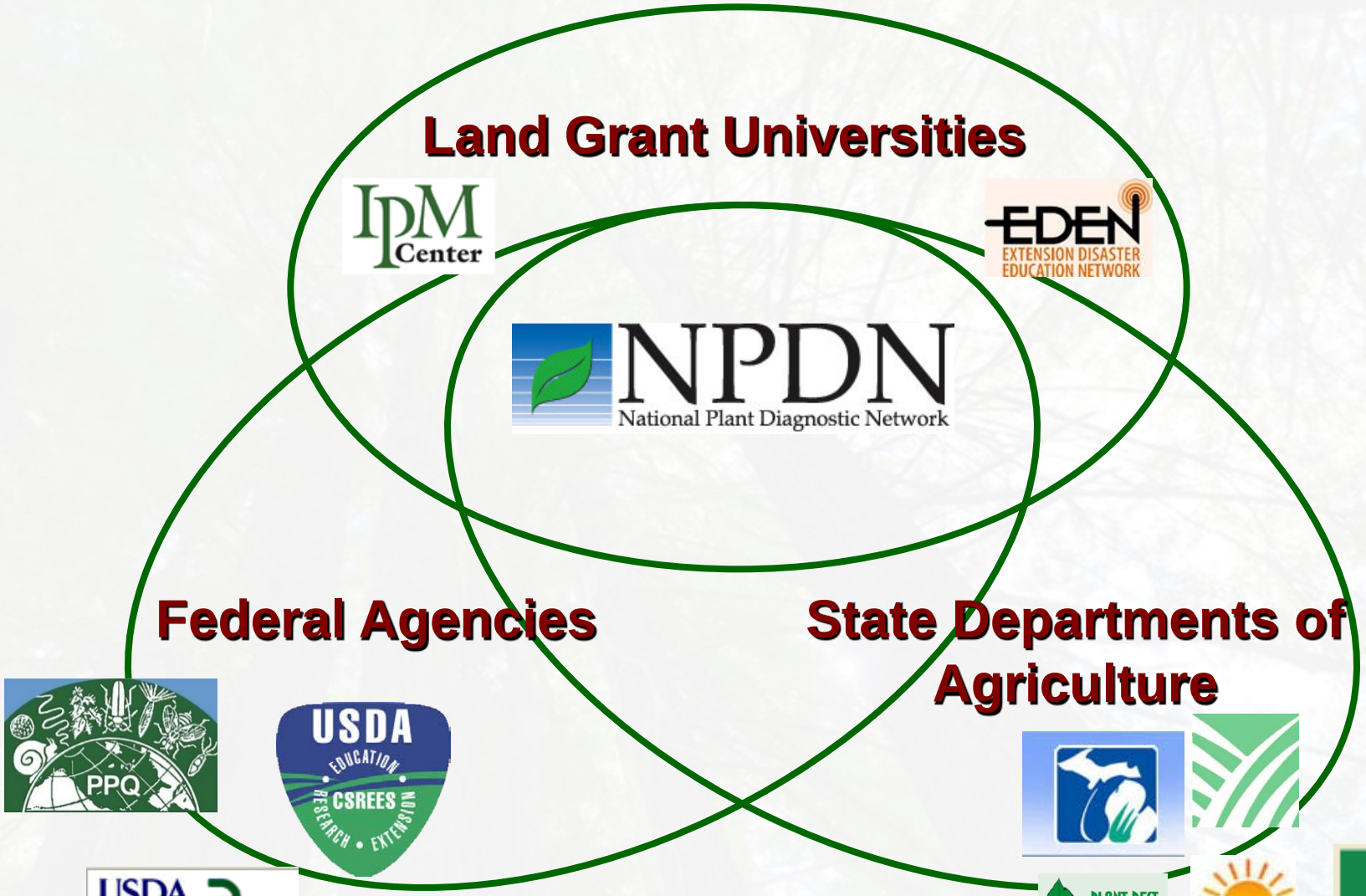
- Founded in 2002 to protect food and agriculture in the United States
- Brings together staff and scientists in Federal, State, and University Labs
- Provides money for education, training, workshops, salaries, and labs
- Forms “the network” for First Detectors through websites and email pest alerts

NPDN
National Plant Diagnostic Network

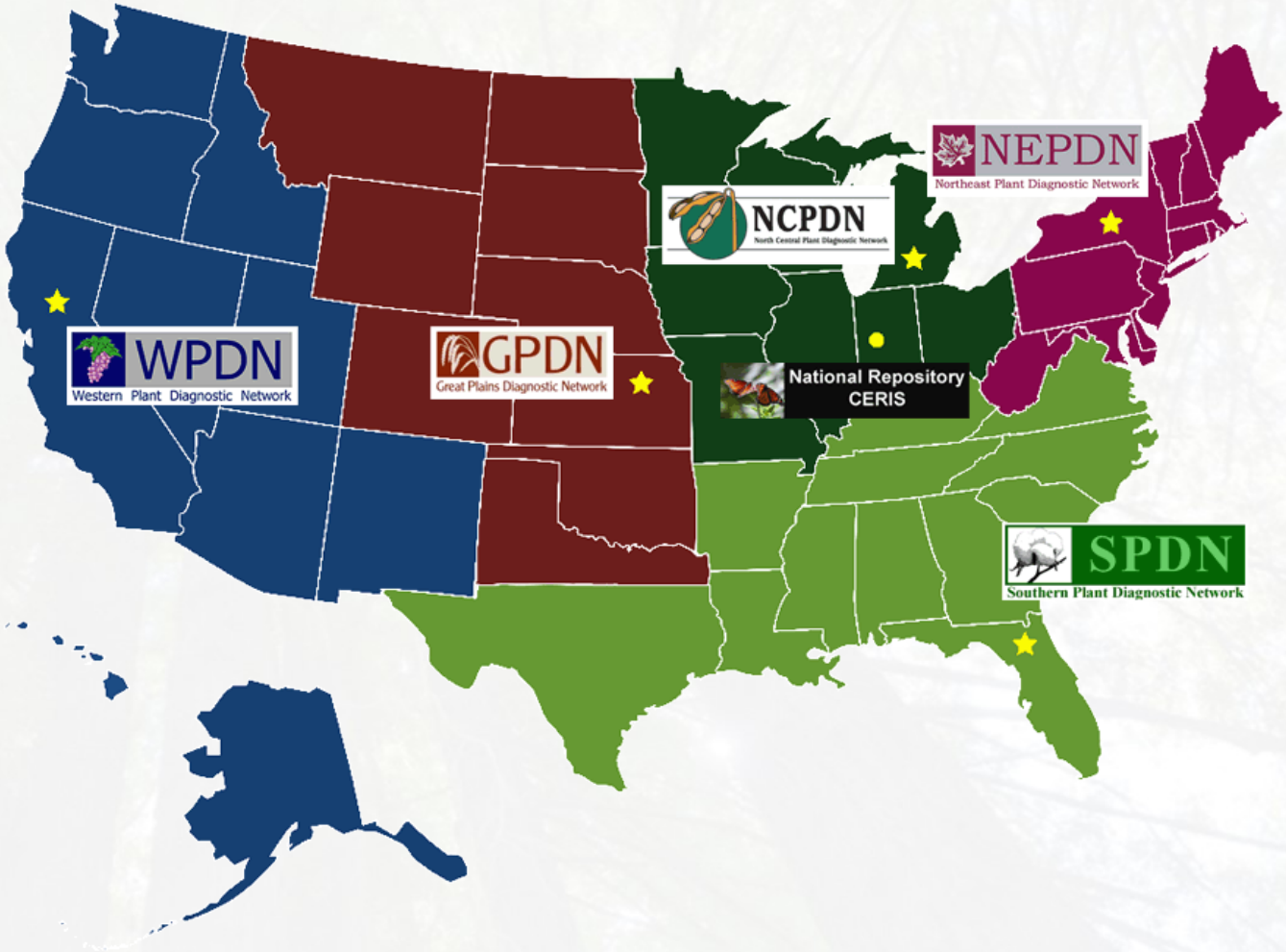
NPDN Responsibilities

- Outbreak detection and identification
- Secure communications system
- Information storage and management
- Data analysis
- Reporting and alerts
- Training and Education

Interagency Partnerships



What Does NPDN Look Like?



Including American Samoa and Guam (WPDN) and Puerto Rico (SPDN)

Who are First Detectors?

Anyone involved in:

- Agriculture
- Food Processing
- Horticulture
- Forestry
- Ecology

Training First Detectors

Training First Detectors in Las Vegas, Nevada

UC Davis Entomology Workshop

University of Hawaii Workshop


NPDN
National Plant Diagnostic Network

Certificate of First Detector Training Completion

is hereby granted

Tom Jefferson

for completion of core "First Detector" and training modules.

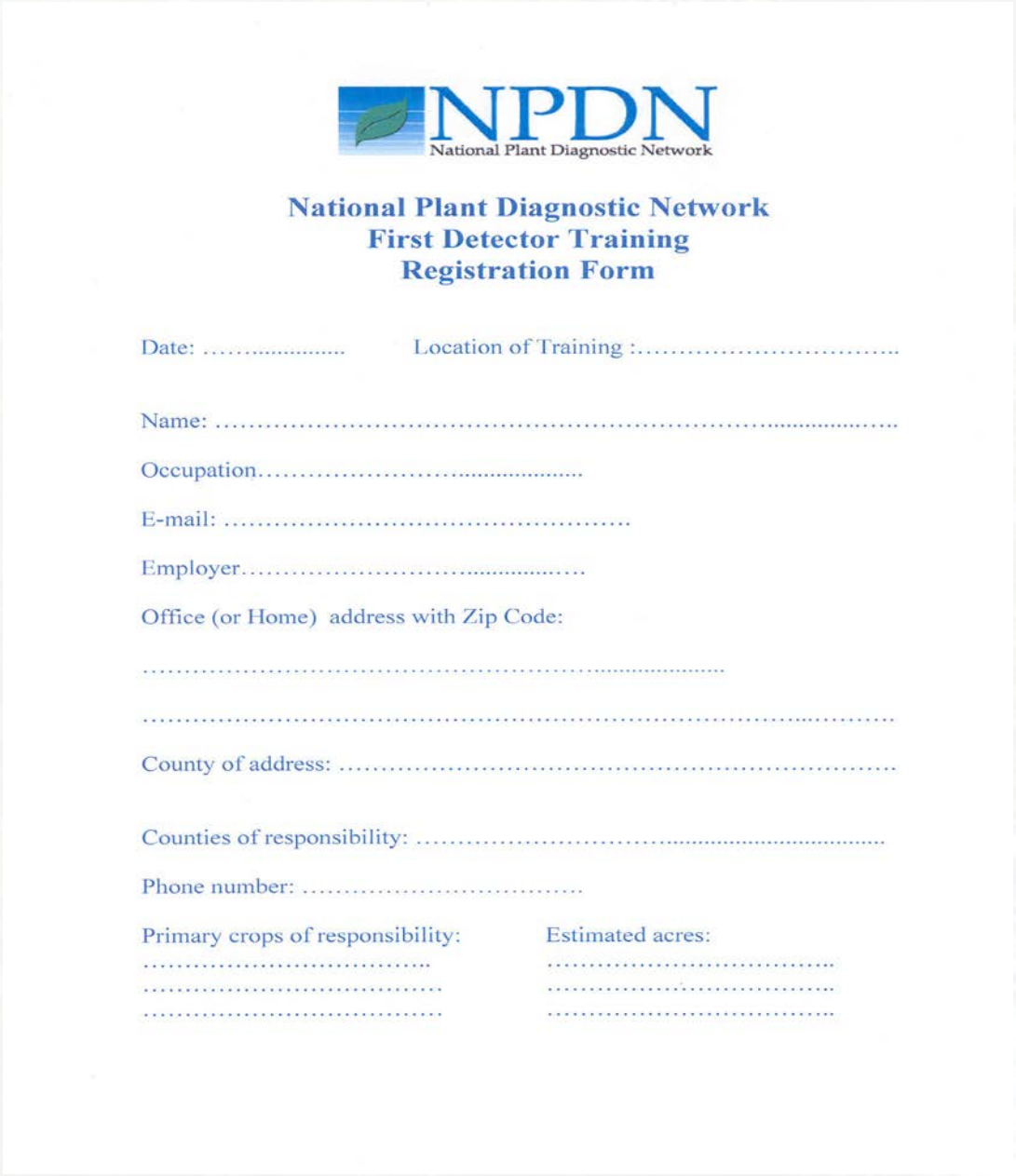
Date: 17th August 2006 *Location: Las Vegas, NV*

This certificate has been approved by
Kitty Cardwell, PhD, NPDN Chair and
Gail Wisler, PhD, Chair of NPDN Training and Education

Richard Hoenisch *Training Session Coordinator*

First Detector Certificate

- **NPDN First Detector Registration**
- **Please print clearly & complete all the information**
- **Confidential!**



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National Plant Diagnostic Network

National Plant Diagnostic Network
First Detector Training
Registration Form

Date: ..... Location of Training :.....

Name: .....

Occupation.....

E-mail: .....

Employer.....

Office (or Home) address with Zip Code:

.....

.....

County of address: .....

Counties of responsibility: .....

Phone number: .....

Primary crops of responsibility:	Estimated acres:
.....	.....
.....	.....
.....	.....

NPDN
National Plant Diagnostic Network

Certificate of First Detector Training Completion

is hereby granted to

Nina Hapner

for completion of core "First Detector" training modules.

October 29, 2014 *Reno, NV*

This certificate has been approved by
Marty Draper, Ph.D., NPDN Chair and
Rachel McCarthy, M.S., Chair of NPDN Training and Education

Training Session Coordinator

UNIVERSITY OF CALIFORNIA AGRICULTURE & NATURAL RESOURCES

UC IPM Online

Statewide Integrated Pest Management Program

Home, Garden, Turf & Landscape Pests

Agricultural Pests

Natural Environment Pests

Exotic & Invasive Pests

Solve your pest problems with UC's best science

http://www.ipm.ucdavis.edu/

Western IPM Center

The Western IPM Center promotes the adoption of integrated pest management practices and funds new research to solve pest problems in agriculture, communities and natural lands throughout the West.

http://www.wrpmc.ucdavis.edu/index.html

University of Nevada
Cooperative Extension

http://www.unce.unr.edu/

NDA
Nevada Department of Agriculture

http://agri.nv.gov/Plant-Industry/

Chemistry Laboratory
Entomology
Environmental Services
Export Certification
Good Agricultural Practices Program (GAP)
Noxious Weeds
Nursery Program
Organic Program
Pest Control
Plant Pathology
Producer Certification
Seed Certification
Specialty Crop Block Grant Program

Nevada state entomologist (insects)
Jeff Knight
jknight@agri.nv.gov
775-353-3767
Plant Diseases:
Nevada state pathologist (plant diseases)
Dr. Shouhua Wang
shwang@agri.nv.gov
775-353-3765
Noxious Weeds
State Noxious Weed Coordinator
Robert Little
rlittle@agri.nv.gov
775-353-3751
Nevada Pest Alerts
Nevada Pest Alerts

Summary of NPDN Mission

- Communicate
- Coordinate
- Cooperate

- Eradication of the Pest

High Risk Pests

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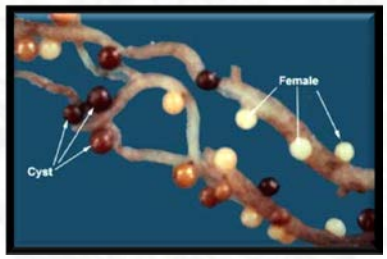
What are High Risk Pests?

Ralstonia on geranium
Margery Daughtry, Cornell Univ

- Plant Pathogens
- Insects and related Arthropods
- Weeds
- Nematodes
- Snails & Slugs

Diaprepes Root Weevil



Golden nematode cysts
Canadian Food Inspection Agency

Parrot Feather
plantlife.uk

Channeled Apple snail

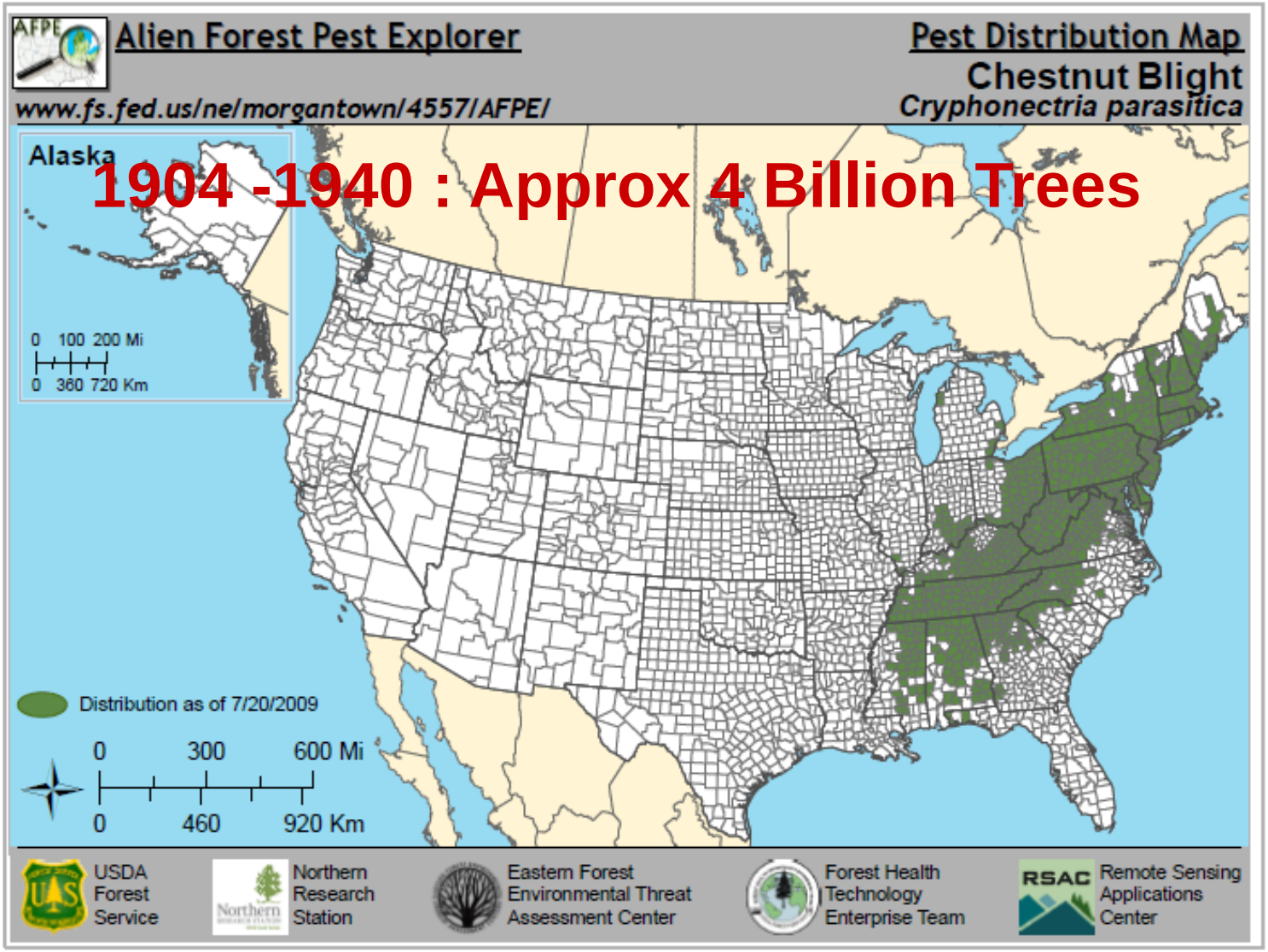
Pathogen & Pest Introductions

- **Chestnut Blight 1904**

Cryphonectria parasitica **, a fungus, arrived in the US from Japan on imported flowering chestnuts**

By 1940 it had destroyed all the native chestnuts

Chestnut Blight Destruction

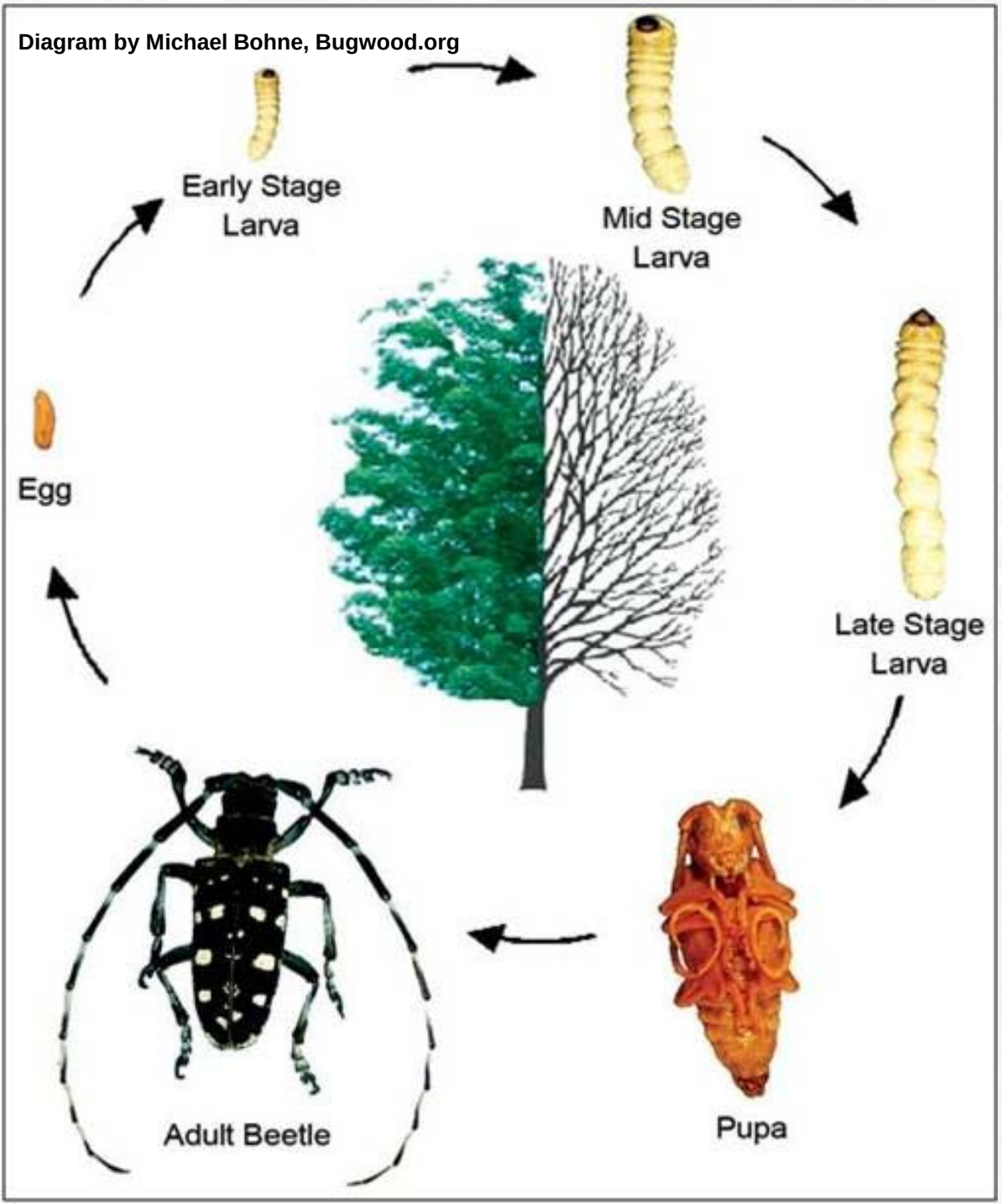



Fort McDermitt
Duck Valley
Summit Lake
Fort McDermitt
HUMBOLDT COUNTY
ELKO COUNTY
Wells Colony
Winnemucca
Elko
South Fork
Battle Mountain
WASHOE COUNTY
PERSHING COUNTY
Lovelock
Pyramid Lake Paiute
Fallon Paiute-Shoshone
LANDER COUNTY
EUREKA COUNTY
Goshute
Reno Sparks
CHURCHILL COUNTY
Ely
WHITE PINE COUNTY
NEVADA
Carson Stewart
Campbell
Ely
Walker River
Yomba
Duckwater
LYON COUNTY
Yerington
Dresslerville
Washoe Ranches
MINERAL COUNTY
NYE COUNTY
ESMERALDA COUNTY
LINCOLN COUNTY
Timbi-Sha Shoshone
Moapa River
CLARK COUNTY
Las Vegas
N
W
E
S
0
25
50
100 Miles
NEVADA TRIBAL LANDS
Tribal Lands
County Boundary
Sources: U.S. Census Bureau (2011), ESRI (2006), TANA (2006).
AIR1100040_6 16 May 2011
EPA
REGION 9 - AIR

The Asian Longhorned Beetle

Anoplophora glabripennis
Motschulsky, 1853
Coleoptera, Cerambycidae

Photographer: Jennifer Forman Orth

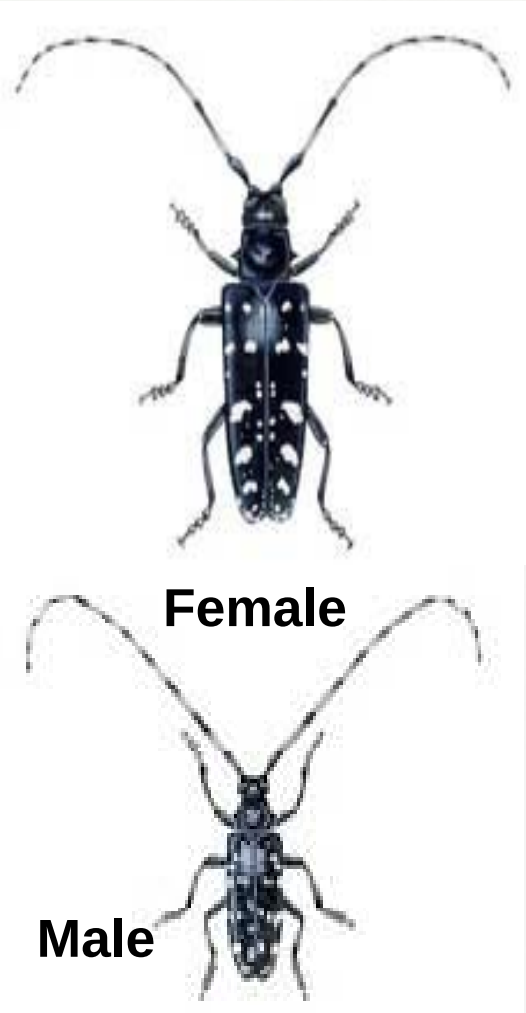


ALB and Beetle Life Cycle

The ALB undergoes a complete metamorphosis. Its life cycle consists of four stages: egg, larva, pupa and adult.


ESCONDIDO
JF

Asian Longhorned Beetle



Female

Male

Asian Longhorned Beetle

Adult

- 1 to 1 ½ inches in length
- Long antennae banded with black and white (longer than the insect's body)
- Shiny jet black body with distinctive white spots
- May have blue color on feet

Asian Longhorned Beetle

Larva

- Legless
- Segmented, off white-yellowish color
- Sclerotized head, reddish brown, retracted into thorax
- 55 mm (over 2”)

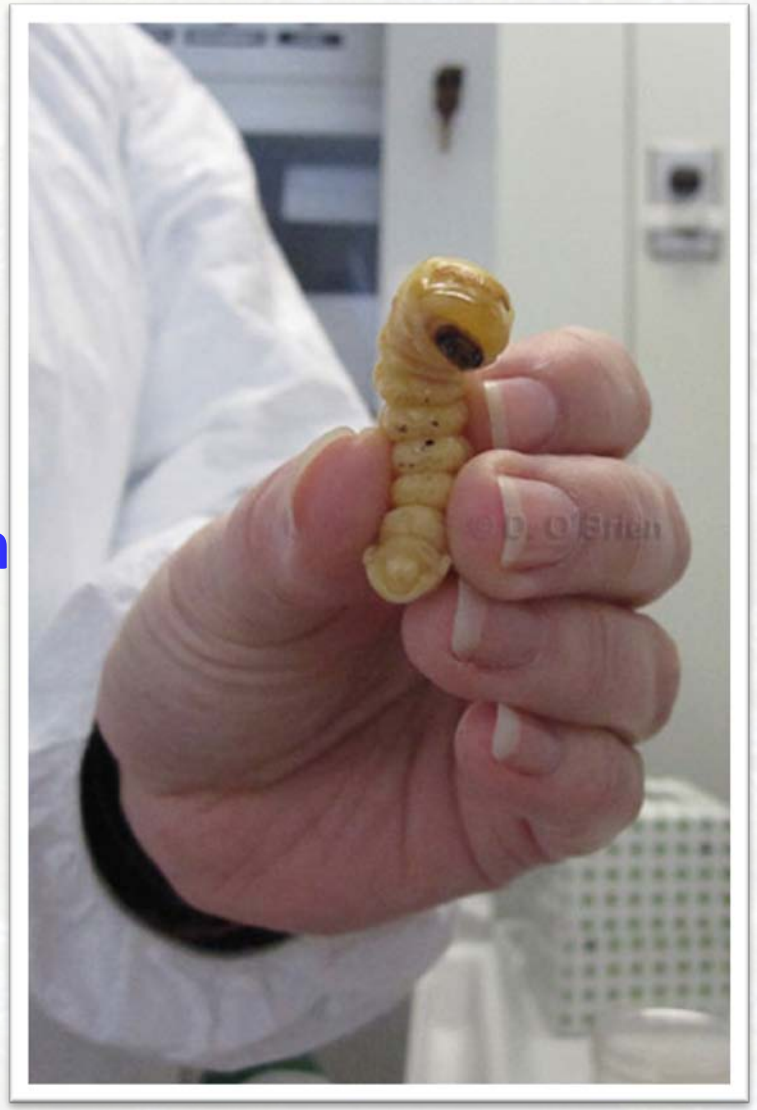


Photo from PA Dept of Forestry

Photo by Joe Boggs, Ohio SU

Photo courtesy of USDA

Photo by Mike Boehm

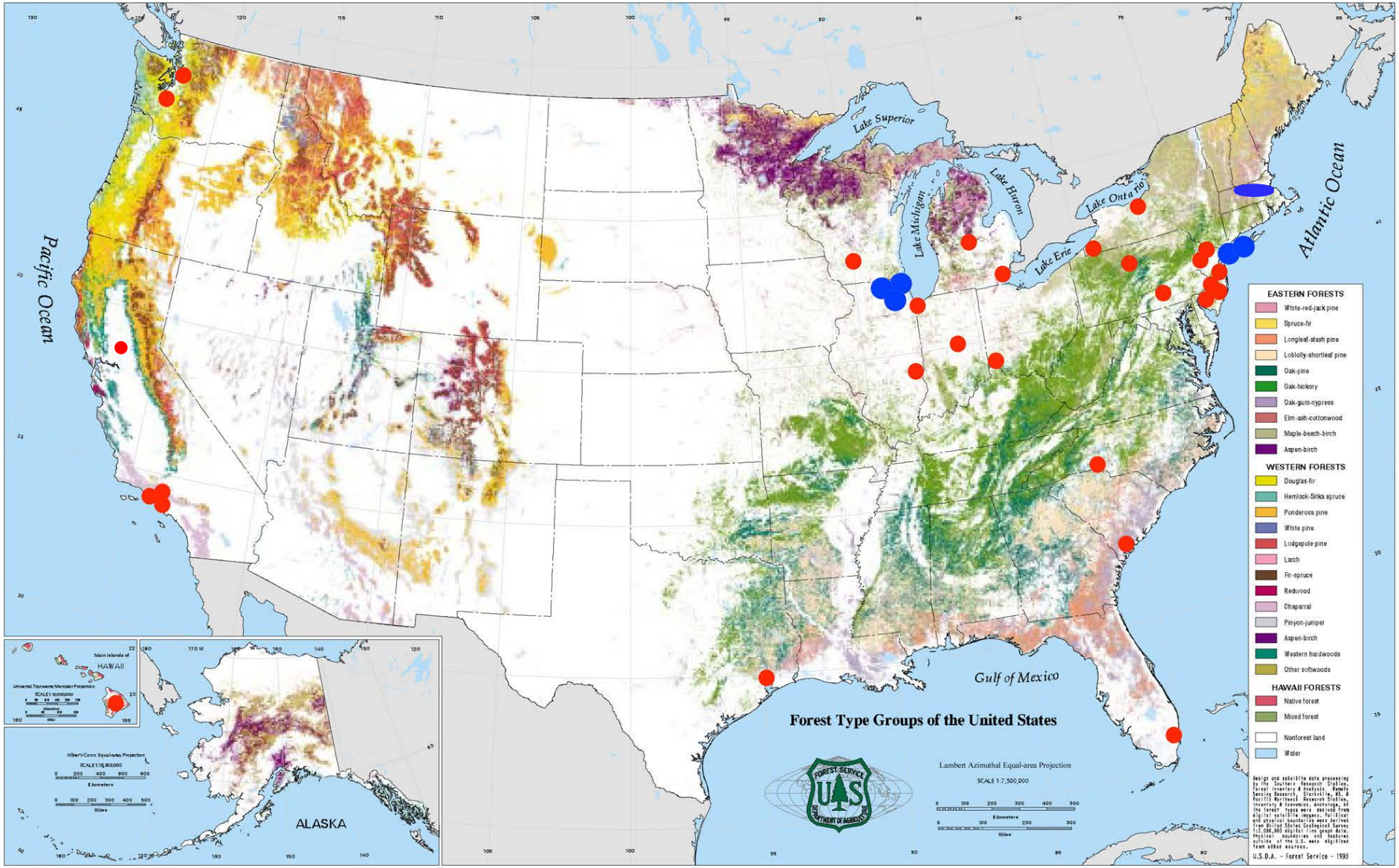
Favorites species

Maples
Elms
Willows
Birch
Horse Chestnuts (Buckeyes)
Sycamores and London Planes
Poplars

Candidates for Replants

Ailanthus – Tree of Heaven
Albizia – Mimosa tree
Celtis – Hackberry
Conifers
Gingko biloba – Maidenhair tree
Liriodendron – Tulip tree
Sorbus – Mountain Ash
Quercus – Oaks
Tilia – Linden

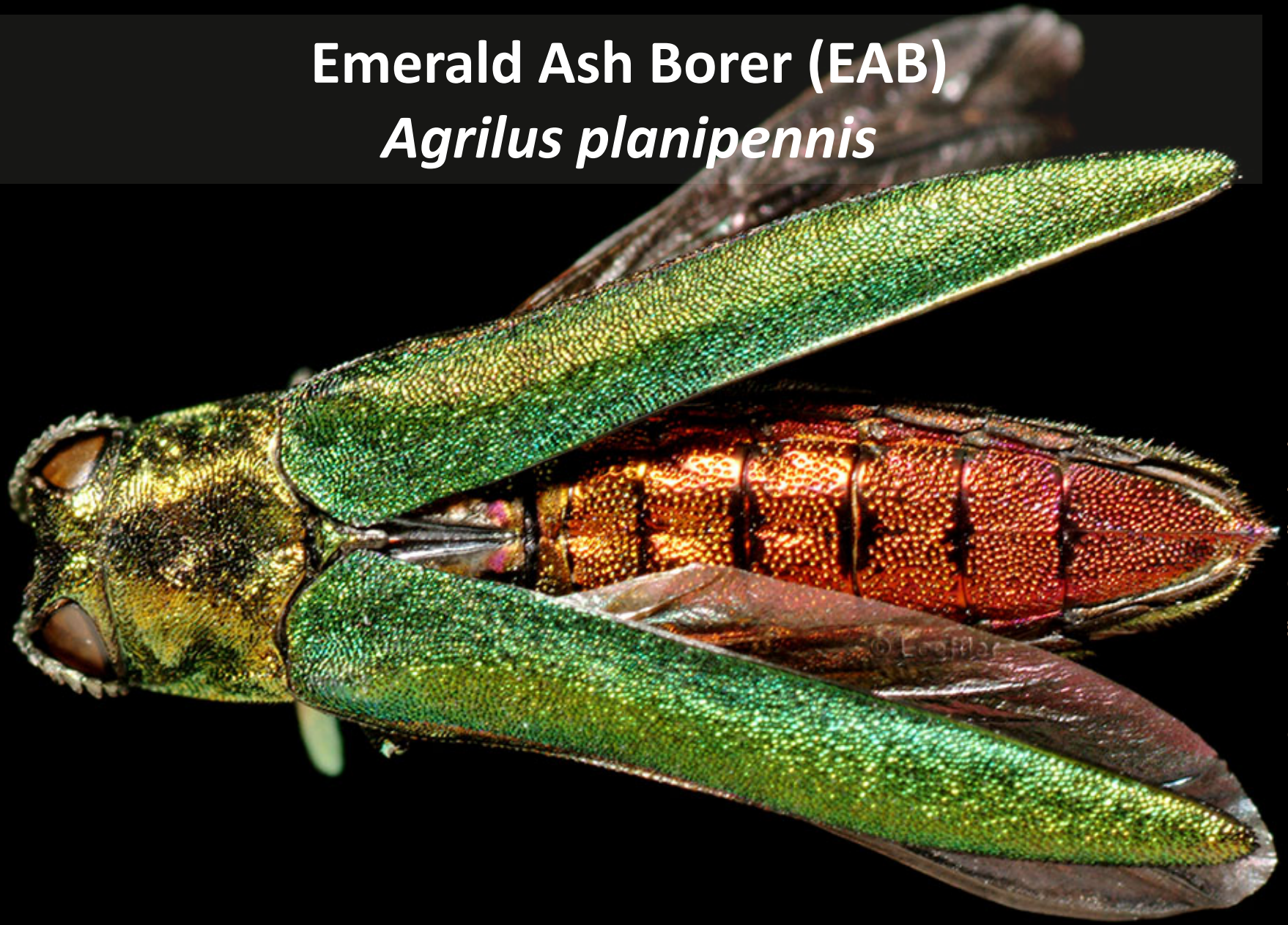
Detection of exotic longhorned beetles and infestations of the Asian longhorned beetle in the U.S.



Updated 2011

● Exotic longhorned beetle detections (not necessarily ALB)

Emerald Ash Borer (EAB)
Agrilus planipennis



Emerald Ash Borer

Adult

- 3/8” – 3/4” long (males slightly smaller)
- Dark metallic emerald green wing covers
- Abdomen metallic purplish red

Emerald Ash Borer meets the Ash Tree

Fraxinus spp. - Ash

Emerald Ash Borer

photo from Bugguide

Native to NE China where it is only a minor forest pest. Discovered in June 2002 in Michigan. Probably introduced on wooden shipping material.

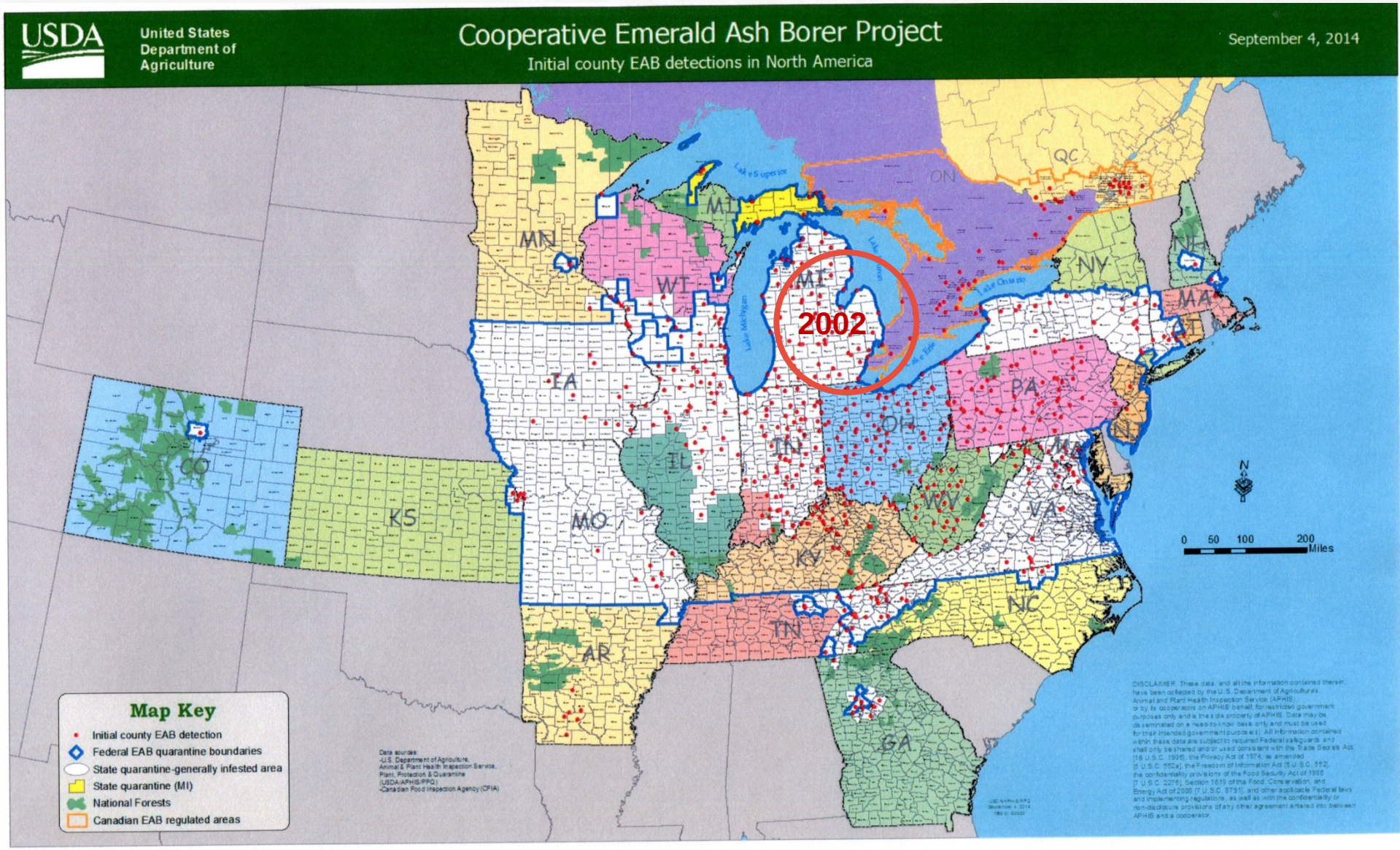
Photo by Jared Spokowsky, New York State Department of Agriculture and Markets, Bugwood.org

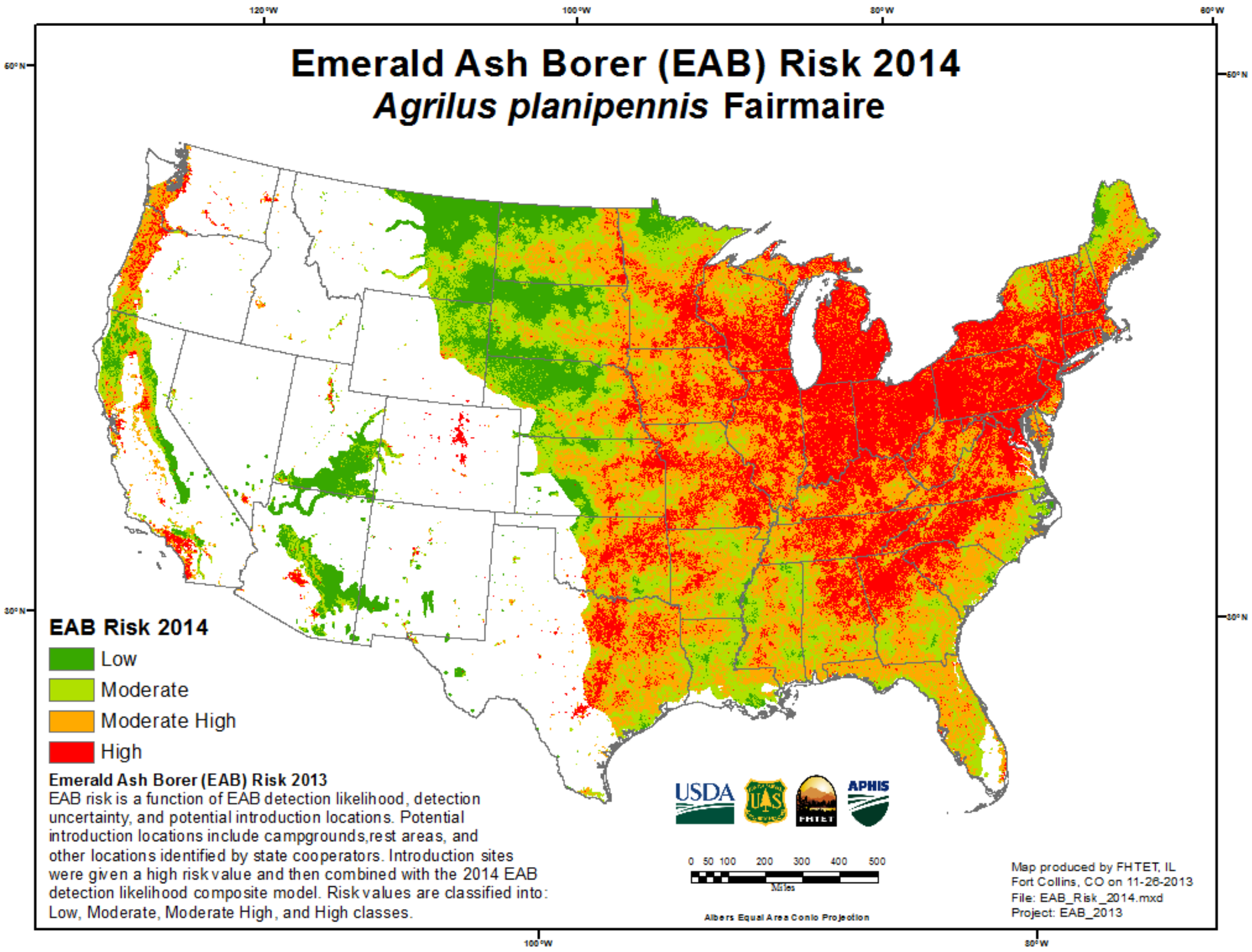
Emerald Ash Borer Life Cycle

Photo Credit: Pennsylvania Department of Conservation and Natural Resources - Forestry Archive, Bugwood.org

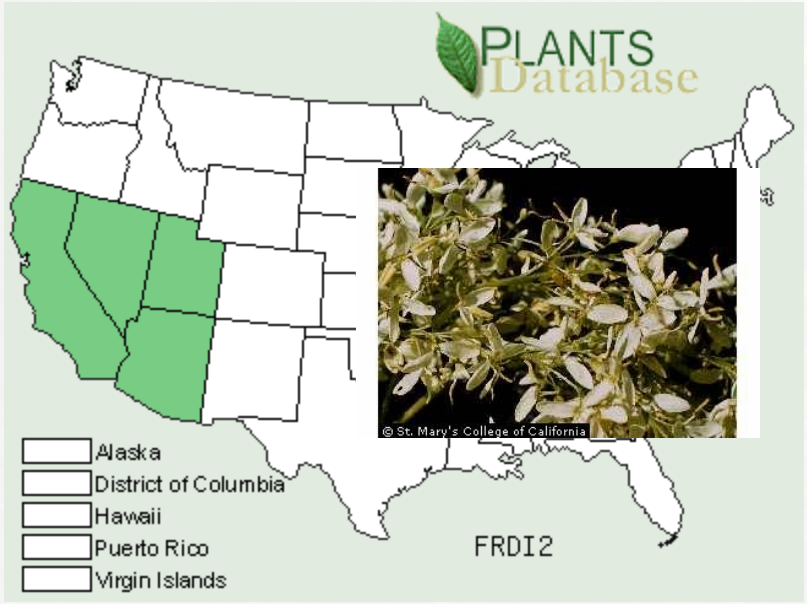
EAB Damage

Emerald Ash Borer 2014



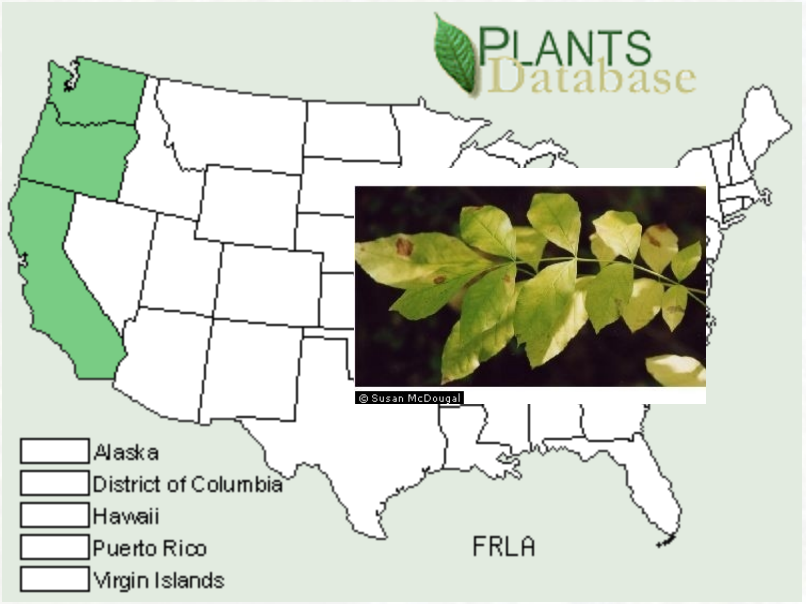

Emerald Ash Borer (EAB) Risk 2014
Agrilus planipennis Fairmaire
120°W
100°W
80°W
60°N
50°N
EAB Risk 2014
Low
Moderate
Moderate High
High
Emerald Ash Borer (EAB) Risk 2013
EAB risk is a function of EAB detection likelihood, detection uncertainty, and potential introduction locations. Potential introduction locations include campgrounds,rest areas, and other locations identified by state cooperators. Introduction sites were given a high risk value and then combined with the 2014 EAB detection likelihood composite model. Risk values are classified into: Low, Moderate, Moderate High, and High classes.
USDA
APHIS
FHTET
0 50 100 200 300 400 500
Miles
Albers Equal Area Conic Projection
Map produced by FHTET, IL
Fort Collins, CO on 11-26-2013
File: EAB_Risk_2014.mxd
Project: EAB_2013

CA, NV,& OR Native Ash



Fraxinus dipetala

California Ash



Fraxinus latifolia

Oregon Ash

http://plants.usda.gov/index.html

http://calphotos.berkeley.edu/flora/

Ornamental Ash species

- F. americana
  - White Ash
- F. excelsior
  - European Ash
- F. pennsylvanica
  - Green / Red Ash
- F. uhdei
  - Evergreen Ash
- F. velutina
  - Modesto Ash

Thousand Cankers Disease of Walnut

A Presentation for NPDN First Detectors

Photo by Andrew Graves

Developed by Richard Hoenisch, Department of Plant Pathology, UC Davis

cdfa
CALIFORNIA DEPARTMENT OF FOOD & AGRICULTURE

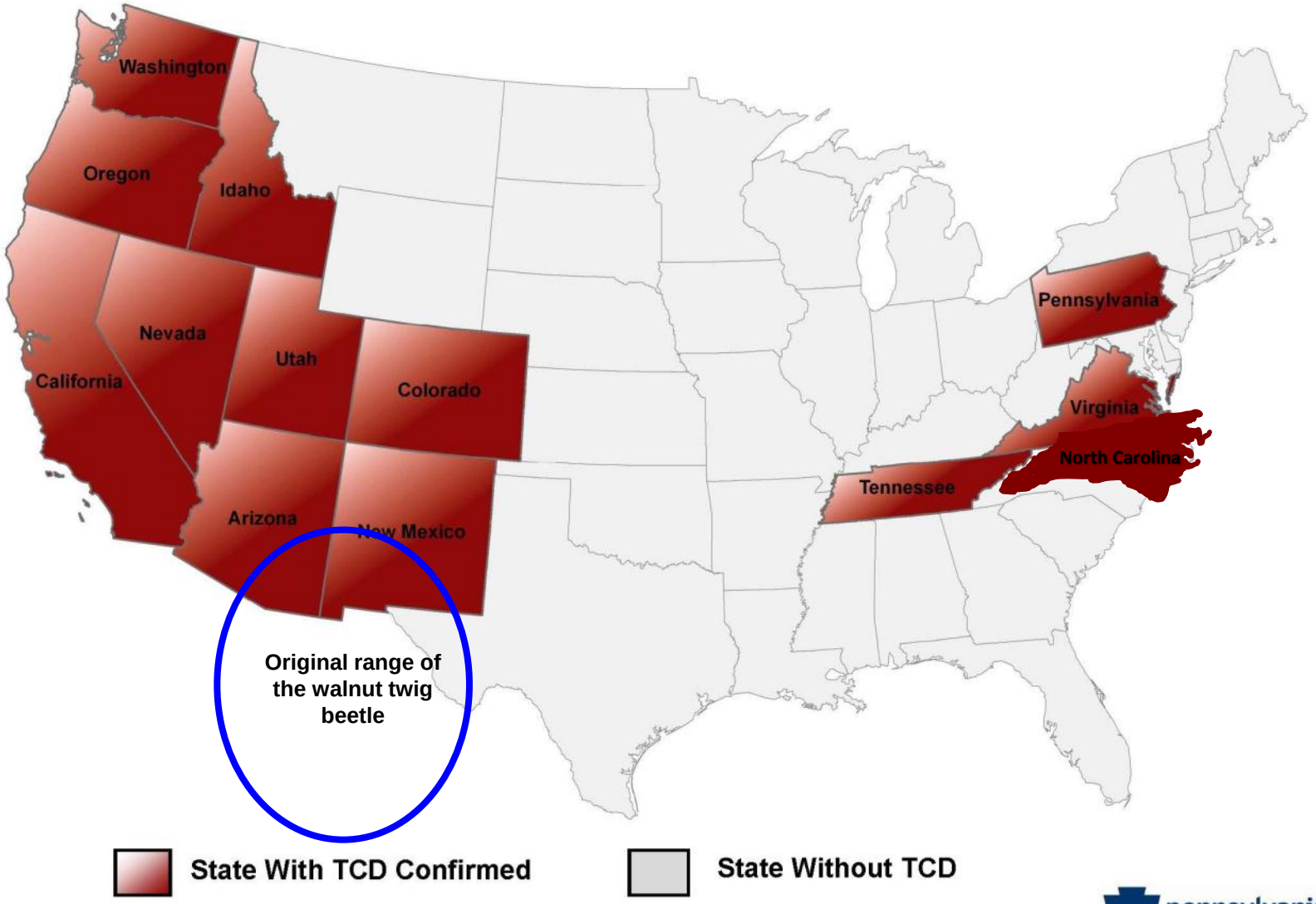
UCDAVIS
UNIVERSITY OF CALIFORNIA

The Walnut Twig Beetle

Pityophthorus juglandis Blackman, 1928

Coleoptera (beetle) Curculionidae (weavils and woodborers)

States Known to have Thousand Cankers Disease as of August 23, 2011



pennsylvania
DEPARTMENT OF AGRICULTURE

The Fungus

Geosmithia morbida in culture

Isolated in Fall, 2008

Ned Tisserat and Whitney Cranshaw, Colorado State

Signs of the presence of the beetle

Very small entrance holes in the bark

Beginning of the beetle colony

The males colonize initially

Photos by Steve Seybold

A group of 3 females in the galleries

The males produce a pheromone that attracts the females .

The more beetles there are in a colony, the more beetles are then attracted to the infested tree

Many cankers

The individual cankers merge

Death by 1000 cankers

Photo by Ned Tisserat & Whitney Cranshaw, Colorado State

Photo by A.D. Graves.

The progression of decline of Infected black walnut trees

hotos by Ned Tisserat & Whitney Cranshaw, Colorado State

1000 Cankers, a very serious disease for the native walnut species

- There can be very fast mortality for this native species
- A very aggressive fungus
- A very efficient vector
- No known resistance
- Black walnut wood is very valuable and is moved from area to area

23,000 beetles were found in these two pieces of wood

NPDN National Plant Diagnostic Network

WPDN Western Plant Diagnostic Network

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FOREST SERVICE US DEPARTMENT OF AGRICULTURE

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APHIS USDA

Photo by e_monk